

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date
14 April 2005 (14.04.2005)

PCT

(10) International Publication Number
WO 2005/034345 A1

(51) International Patent Classification⁷: **H03H 9/02**

Robert Frederick [GB/DE]; c/o Philips Intellectual Property &, Standards GmbH Weiss Hausstr. 2, 52066 Aachen (DE). METZMACHER, Christof [DE/DE]; c/o Philips Intellectual Property &, Standards GmbH Weiss Hausstr. 2, 52066 Aachen (DE).

(21) International Application Number:
PCT/IB2004/051867

(74) Agent: **MEYER, Michael**; Philips Intellectual Property &, Standards GmbH Weiss Hausstr. 2, 52066 Aachen (DE).

(22) International Filing Date:
27 September 2004 (27.09.2004)

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, SZ, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW only):

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
03103694.0 6 October 2003 (06.10.2003) EP

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

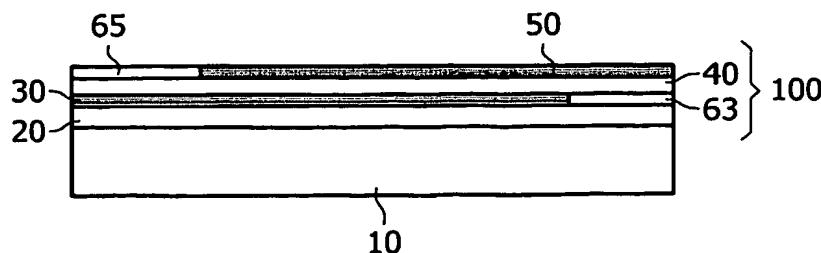
(71) Applicant (for DE only): **PHILIPS INTELLECTUAL PROPERTY & STANDARDS GMBH [DE/DE]**; Stein-damm 94, 20099 Hamburg (DE).

Published:

— with international search report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: RESONATOR STRUCTURE AND METHOD OF PRODUCING IT



(57) Abstract: In order to provide a resonator structure (100) in particular a bulk-acoustic-wave (BAW) resonator, such as a film BAW resonator (FBAR) or a solidly-mounted BAW resonator (SBAR), comprising at least one substrate (10); at least one reflector layer (20) applied or deposited on the substrate (10); at least one bottom electrode layer (30), in particular bottom electrode, applied or deposited on the reflector layer (20); at least one piezoelectric layer (40), in particular C-axis normal piezoelectric layer, applied or deposited on the bottom electrode layer (30); at least one top electrode layer (50), in particular top electrode, applied or deposited on the bottom electrode layer (30) and/or on the piezoelectric layer (40) such that the piezoelectric layer (40) is in between the bottom electrode layer (30) and the top electrode layer (50), it is proposed that at least one dielectric layer (63, 65) applied or deposited in and/or on at least one space in at least one region of non-overlap between the bottom electrode layer (30) and the top electrode layer (50). The invention is also concerned with a method of making such resonator structure its use.

WO 2005/034345 A1